APPENDIX A – TEXTUAL DESCRIPTION OF ANALYZER

Analyzer Summary

NAME

FILE SYSTEM USAGE

VERSION 34

SUMMARY

This analyzer checks the disk space on each of the mounted local file systems.

Data Required

/usr/bin/bdf

The bdf command (with the –il options) displays the amount of free disk space available on all of the normally mounted local file systems. The reported numbers are in kilobytes and includes a report of all the used and free inodes.

Issues Detected

These are the issues which are detected from this analyzer:

The file system is full.

The disk space on the file system has reached a threshold level (90%).

The disk space on the file system has reached a threshold level (95%).

1. THE FILE SYSTEM IS FULL.

This issue is flagged when there is no remaining disk space for a particular file system.

2. THE DISK SPACE ON THE FILE SYSTEM HAS REACHED A THRESHOLD LEVEL (90%).

This issue is flagged when the disk space for a given file system has reached 90%.

3. THE DISK SPACE ON THE FILE SYSTEM HAS REACHED A THRESHOLD LEVEL (95%).

This issue is flagged when the disk space for a given file system has reached 95%.

Information Returned By Analyzer

The information returned by the analyzer is:

The supporting text returned by the analyzer is:

Algorithm/Pseudocode

Verify that one input file has been passed in

If the check fails,

    Generate failure

For each file system:

    Check that the file system space is not full (exceeds the full level)

    If the check fails,

        Generate issue #1

    Else?

        Check that the file system has not reached a threshold level

        If check fails?

            Generate issue #2

Additional Information

For additional information, go to...

Recommended Actions

There may be nothing to do nowadays from a customer point of view with large disk farms. Even if the thresholds have been reached, there could still be 5GB of disk space available, for example, on a file system of 100GB. The issues should be recommendations instead of definite errors.

Appendix B – Analyzer code

```
# @(#) $Header: FileSystemUsageAnalyzer.ksh,v 1.6 2001/04/20
##############################################
#Analyzer Declarations
##############################################
# Source the header file
. $SOURCE
ISSUE1=1
#ISSUE_TEXT1='The disk space on the file system {0} has reach a threshold level
(Full).
ISSUE2=2
#ISSUE_TEXT2='The disk space on the file system {0} has reach a threshold level
(90%).
ISSUE3=3
#ISSUE_TEXT3='The disk space on the file system {0} has reach a threshold level
(95%).
TRUE="true"
FALSE="false"
THRESHOLD90=90
THRESHOLD95=95
FULL=100
#100024
#Disk Usage
#Disk usage statistics.
#The bdf(1M) command displays the amount of free disk space
#available on all of the mounted file systems.
#The reported numbers are in kilobytes.
#The collection command is: 'bdf -il'
BDF="$1"
cat #BDF ? grep "^[/   ]" ? awk '{
  if (NF==1) {1=$1;getline;print 1,$0} else {print $0}
}' ? while read FS KB USED AVAIL PUSED IUSED IFREE PIUSED MP do
  ISSUE=""
```

```
let pused= ${PUSED%*\%}
if [ [ $pused –ge $THRESHOLD90 ] ];then let ISSUE=$ISSUE3;fi
if [ [ $pused –ge $THRESHOLD95 ] ];then let ISSUE=$ISSUE2;fi
if[ [ $pused –ge $FULL              ] ];then let ISSUE=$ISSUE1;fi
if [ [ ! –z $ISSUE ] ]
then
# Snipset : depending on the size of the 1vol name, bdf may use 1 or 2 lines
BDF=SNIPSET =$(cat $BDF ? grep –e "^Filesystem" )
BDF_SNIPSET=$BDF_SNIPSET"\n"$(cat $BDF ?\
  awk –v fs=${FS} '{
    if (NF==1 && fs==$1)
      {print $0;getline; print $0;exit}
    else{
      if ($1==fs) { pring $0}
}
  }'
}
     write_issue $ISSUE "$FS" "BDF_SNIPSET"
fi
done
exit 0
```

Appendix C – Analyzer XML Descriptor

```
<?xml version="1.0"?>
<analyzer version="1.0" name="FileSystemUsageAnalyzer" issue-base-
value="100">
 <submitter>jean_guiannotte@hp.com</submitter>
 <caption>checks for file system full or used space above 90% and 95%
threshold</caption>
<issue-strategy>TEXT_PROPERTIES_ISSUE_STRATEGY</issue-strategy>
<!—This is the definition of the execution of the analyzer-->
<program>
  <language>ksh</language>
   <source type="text" purpose="MAIN">FileSystemUsageAnayzer.ksh</source>
</program>
<number-of-systems>1</number-of-systems>
<!—this is the expected input to the analyzer-->
</input>
   <argument index="1" collectible-id="100024"/>
</input>
</analyzer>
```

Appendix D – Analyzer Template

#Fri Mar 16 11:51:36 EST 2001

1=The\ disk\ space\ on\ the\ file\ system\ {0}\ has\ reached\ a\ threshold\ level (Full)

2=The\ disk\ space\ on\ the\ file\ system\ {0}\ has\ reached\ a\ threshold\ level (90%)

3=The\ disk\ space\ on\ the\ file\ system\ {0}\ has\ reached\ a\ threshold\ level (95%)

Appendix E – Report Generated By Collector

Filesystem	kbytes	used	avail	%used	iused	ifree	%iuse	Mounted on
/dev/vg00/lvol3	83733	63556	11803	84%	2048	11392	15%	/
/dev/vg00/lvol1	47829	24463	18583	57%	21	7659	0%	/stand
/dev/vg00/lvol8	480341	328474	103832	76%	14396	211908	6%	/var
/dev/vg01/lvol2	4103345	2303365	1389645	62%	3061	670539	0%	/usr2
/dev/vg01/lvol1	1025617	470582	452473	51%	4629	163371	3%	/usr1
/dev/vg00/lvol7	600571	442529	97984	82%	16450	79230	17%	/usr
/dev/vg03/lvusers	99669	7588	82114	8%	20	16108	0%	/users
dev/vg00/lvol4	30597	618	26919	2%	183	15049	1%	/tmp
/dev/vg03/lvscratch	1001729	522264	379292	58%	137	164663	0%	/scratch
/dev/vg01/lvpat	299157	36457	232784	14%	2437	45563	5%	/patrol
/dev/vg03/lvoracle	716715	11	645032	0%	6	113978	0%	/oracle
/dev/vg001vol6	319125	212865	74347	74%	2520	48552	5%	/opt
/dev/vg02/lvistport	1001729	438510	463046	49%	1313	163487	1%	/istport
/dev/vg00/lvol5	19861	17207	667	96%	446	3010	13%	/home
/dev/vg04/lvbkp	2051553	890694	955703	48%	2820	334780	1%	/dump
/dev/vg03/lvbridge	398869	343610	15372	96%	3621	60507	6%	/bridge
/dev/vg01/lvudin1	2003481	1342339	460793	74%	12	329588	0%	/udinreg1
/dev/vg02/lvudin1	2003481	1342315	460817	74%	11	329589	0%	/udinreg2
/dev/vg03/lvudin1	1001729	235723	665833	26%	11	164789	0%	/udinreg3
/dev/vg03/lvreel	700691	9	630612	0%	4	111484	0%	/reeln
/dev/vg04/lvudin1	1001729	225467	676089	25%	10	164790	0%	/udinreg4

Appendix F – Analyzer Issue XML Report

1. XML Output of Analyzer

```
<issue>
  <id>2</id>
  <substitutable-argument index="0">
      <![CDATA[/dev/vg00/1vol5]]>
  </substitutable-argument>
   <supporting-text>
      <[CDATA[Filesystem        kbytes used   avail  %used iused  ifree
      %iuse  Mounted on
/dev/vg00/1vol5      19861   17207   667 96%  446    3010    13%  /home]]>
 </supporting-text>
</issue>
 <issue>
  <id>2</id>
  <substitutable-argument index="0">
    <!{CDATA[/dev/vg03/lvbridge]]>
<substitutable-argument>
<supporting-text>
   <!{CDATA{Filesystem            kbytes used   avail  %used iused  ifree
      %iuse  Mounted on
/dev/vg03/lvbridge   398869          15372       96% 3621   60507   6%
      /bridge]]>
  </supporting-text>
</issue>
```

2. XML Output of Analyzer Harness

```
- <issues-found>
      - <issue>
            ....
        </issue>
```

```
. . . .
- <issue>
        <assessment-id>asmt1</assessment-id>
      - <system-name>
            <![CDATA[ dineruat ]]>
        <system-name>
      - <issue-description>
            <![CDATA[
The disk space on the file system /dev/vg00/ivol5 has reached a threshold level
(95%).]]>
        </issue-description>
        <owner–1 />
        <owner-2 />
      - <analyzer-name>
            <![CDATA[FileSystemUsageAnalyzer]]>
      -</analyzer-name>
      - <supporting-text-1>
            ,![CDATA[
Filesystem          kbytes    used    avail %used  iused  ifree %iuse Mounted on
//dev/vg00/lvol5    19861   17207    667   96%    446   3010   13% /home]]>
        </supporting-text-1>
      - <supporting-text-2>
            <!CDATA[  ]]>
        </supporting-text-2>
      - <supporting-text-3>
            <!CDATA[  ]]>
        </supporting-text-3>
      - <supporting-text-4>
            <!CDATA[  ]]>
        </supporting-text-4>
    </issue>
. . . .
- <issue>
```

```
<assessment-id>asmt1</assessment-id>
- <system-name>
    <![CDATA[ dineruat ]]>
<system-name>
- <issue-description>
    <![CDATA[
The disk space on the file system /dev/vg03/ivbridge has reached a threshold level
(95%).]]>
</issue-description>
<owner–1 />
<owner-2 />
- <analyzer-name>
    <![CDATA[FileSystemUsageAnalyzer]]>
,/analyzer-name>
- <supporting-text-1>
    ,![CDATA[
Filesystem          kbytes    used    avail %used  iused   ifree %iuse Mounted
on
//dev/vg00/lvol5   398869  343610  15372  96%   3621 60507    6% /bridge]]>
</supporting-text-1>
- <supporting-text-2>
    <!CDATA[ ]]>
</supporting-text-2>
- <supporting-text-3>
    <!CDATA[ ]]>
</supporting-text-3>
- <supporting-text-4>
    <!CDATA[ ]]>
</supporting-text-4>
</issue>
. . . .
</issues-found>
```

Appendix G – Final Report

Acme Catapults

Denver, CO

Technology Assessment Report

Hardware and Operating System Analysis

02-May-2001

Prepared by _____

Assessment Team

Joe Smith – 987-654-3310

Table of contents	
	* * * *

Account Team	
	* * * *

Technology Assessment Team	
	* * * *

Analyzers Used	
BootScript	CPUchasisAnalyzer
CrashconfAnalyzer	DiagnosticsconfigAnalyzer
DmesgAnalyzer	DumpFileSystem
FscheckPassNumberAnalyzer	FileSystemUsageAnalyzer
FstabAnalyzer	GeneralErrorAnalyzer
Kernelcompare	KernelInPlace
LVMgeneral	Lvlnboot
MemoryAnalyzer	ProcessorAnalyzer
RootMirrorAnalyzer	SGClusterconfigAnalyzer
SGClusterStatus	SGDaemonchecker
SGPackageconfigAnalyzer	SGReleaseAnlayzer
SGTiming Parameters	

Systems Assessed		
System Names	Systems Types	Nodes
d-ineruat		
Gals		

Executive Summary	
* * * *	* * * *

Detailed Technical Issues
Node: Issues are assigned numbers for traceability only. Actual number of issues is less than indicated due to duplicate across systems.

System Name	Issue	Owner	Resolution Date
Dineruat	1. File systems on the same disk have the same FSCK pass number.		
	2. File systems on the same disk have the same FSCK pass number.		
	3. File systems on the same disk have the same FSCK pass number.		
	* * * *		
	27. File systems on the same disk have the same FSCK pass number.		
	28. The disk space on the file system/dev/vg03/lvbrdidge has reached a threshold level (95%)		
	29. File systems on the same disk have the same FSCK pass number.		
	30. The SG daemon cmcld is not running on this cluster system.		
	31. File system listed in /etc/fstab is not mounted		
	32. The disk space on the file system /dev/vg00/lvol5 has reached a threshold level (95%)		
	33. File system listed in etc/fstab is not mounted		
Dineruat, gals	34. MC/ServiceGuard does not appear to be installed (not listed in swlist output).		
	35. MC/ServiceGuard does not appear to be installed (not listed in swlist output).		
Gals	36. There is a conflict in the file system mount order		

	37. The version of the diagnostic software is not up to date with the latest version.		
	38. The version of the diagnostic software is not up to date with the latest version A.24.00.		
	* * * *		

Appendix H

Enterprise.xml:

```
<?xml version="1.0"?>
<analyzer version="1.0" name="Enterprise">
 <caption>High Level Assessment
 <secondary-heading>Operating System</secondary-heading>
 <secondary-heading>File System</secondary-heading>
 <secondary-heading>Hardware</secondary-heading>
 <secondary-heading>Networking</secondary-heading>
...
</analyzer>
```

FileSystem.xml:

```
<?xml version="1.0"?>
<analyzer version="1.0" name="FileSystem">
 <caption>File System Category
 <secondary-heading>Logical Volumes</secondary-heading>
 ...
</analyzer>
```

Logical Volumes.xml:

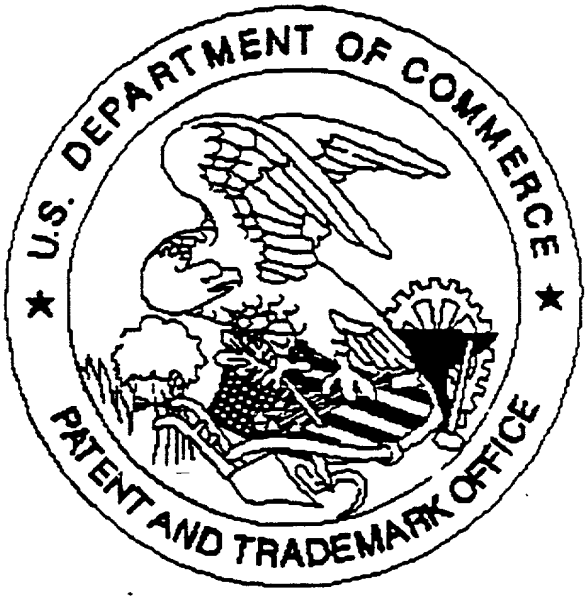
```
<?xml version="1.0"?>
<analyzer version="1.0" name="Logical Volumes">
 <caption>Logical Volumes Sub-Category
 <secondary-heading>File System Usage</secondary-heading>
 <secondary-heading>Logical Volume Management</secondary-heading>
 ...
</analyzer>
```

File SystemUsage.xml

See Appendix C; unchanged

United States Patent & Trademark Office

Office of Initial Patent Examination -- Scanning Division



Application deficiencies found during scanning:

☐ Page(s)_____ of _____ were not present for scanning. (Document title)

☐ Page(s)_____ of _____ were not present for scanning. (Document title)

☒ ***Scanned copy is best available.*** Pages 55-69 of the specification are appendix.